

WORLD-BEAM® Q20 Sensors

High performance in worldwide standard rectangular housing

High-performance photoelectric sensors in a compact, rugged, sealed housing

The new standard for industry-standard sensors. Banner's new WORLD-BEAM® Q20 delivers a host of sensing modes in a durable, IP67-sealed housing with industry-standard 25.4 mm mounting. The compact Q20 is the newest member of the WORLD-BEAM family of sensors, Banner's complete line of cost-effective, rugged and powerful photoelectric sensors.

A versatile family of sensors for the most demanding applications

- ▶ Compact, rectangular housing with industry-standard mounting configuration
- ▶ Opposed, polarized and non-polarized retroreflective, and diffuse models
- ▶ Visible red beam for easy alignment on most models
- ▶ High-visibility LED indicators for signal and power
- ▶ Water-tight IP67/NEMA 6 rated enclosure
- ▶ Washdown rated to 1200 psi
- ▶ 10 to 30V dc operation
- ▶ Versatile mounting options, including M3 (3 mm) threaded brass inserts and 25.4 mm hole spacing
- ▶ Single-turn gain potentiometer for easy configuration
- ▶ Complementary PNP (sourcing) or NPN (sinking) outputs, depending on model
- ▶ 2 m or 9 m attached cable, or Pico- or Euro-style quick-disconnect

Rugged workhorse sensors with a space-saving footprint



The cost-effective solution for the vast majority of tough sensing applications

- ▶ Features a selection of sensing modes with the performance of much larger photoelectric sensors
- ▶ Provides molded-in threaded mounting holes on standard 25.4 mm (1-inch) spacing for quick installation
- ▶ Offers a compact ABS housing with overmolded construction for rugged, reliable sensing
- ▶ Features advanced ASIC design for excellent cross-talk avoidance
- ▶ Offers excellent EMI/RFI noise immunity
- ▶ Delivers bright operating status indicators visible from 360°
- ▶ Solves demanding industrial and commercial applications, including packaging and materials handling



Wide array of models and sensing modes

- ▶ Diffuse (250, 800 and 1500 mm)
- ▶ Opposed (10 and 15 m)
- ▶ Polarized retroreflective (4 m)
- ▶ Non-polarized retroreflective (6 m)

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








more sensors, more solutions

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WORLD-BEAM® Q20 Models, 10 to 30V dc

Sensing Mode	Models*	Range†	Output	Sensing Beam	Data Sheet
Opposed (Effective Beam: 10 mm) 	Q20E	10 m	N/A	624 nm Visible Red	127816
	Q20PR		PNP		
	Q20NR		NPN		
Opposed (Effective Beam: 10 mm) 	Q20EL	15 m	N/A	850 nm Infrared	
	Q20PRL		PNP		
	Q20NRL		NPN		
Polarized Retroreflective 	Q20PLP	4 m	PNP	660 nm Visible Red	
	Q20NLP		NPN		
Retroreflective 	Q20PLV	6 m	PNP	660 nm Visible Red	
	Q20NLV		NPN		
Diffuse (Long Range) 	Q20PDL	800 mm	PNP	624 nm Visible Red	
	Q20NDL		NPN		
		Q20PDXL	1500 mm	PNP	850 nm Infrared
Q20NDXL		NPN			
Diffuse (Short Range) 	Q20PD	250 mm	PNP	624 nm Visible Red	
	Q20ND		NPN		

*Only standard 2 m cable models are listed. For 9 m cable, add suffix **W/30** to the model number (example, **Q20E W/30**).

QD Models: A model with a QD requires a mating cable.

For a 4-pin integral Pico-style QD, add suffix **Q7** (example, **Q20EQ7**).

For a 4-pin 150 mm Pico-style PVC pigtail QD, add suffix **Q** (example, **Q20EQ**).

For a 4-pin 150 mm Euro-style PVC pigtail QD, add suffix **Q5** (example, **Q20EQ5**).

For a 4-pin 150 mm Euro-style PUR pigtail QD, add suffix **QPMA** (example, **Q20EQPMA**).

† Retroreflective range is specified using one model BRT-84 retroreflector. Actual sensing range may be more or less than specified, depending upon efficiency and reflective area of the retroreflector(s) used.

Diffuse performance based on use of 90% reflectance white test card.

Opposed-Mode Apertures

Aperture	Model	Aperture Size
Circular hole	APQ20-0.5	0.5 mm dia.
	APQ20-1	1 mm dia.
	APQ20-2	2.0 mm dia.
Vertical slot	APQ20-0.5V	0.5 mm wide
	APQ20-1V	1 mm wide
	APQ20-2V	2.0 mm wide
Kit	APK-Q20	Includes two of each type

Opposed-mode Q20 sensors may be fitted with an aperture to narrow or shape the Q20 effective beam to more closely match the size or profile of objects being sensed.





Dimensions



Reflector

Model	Description	Reflectivity Factor
BRT-84	Round acrylic target	1.4

Brackets

Models	Description
 SMBQ20L	<ul style="list-style-type: none"> Sensor vertical base mount ± 5° tip, ± 7° swivel Stainless steel
 SMBQ20LV	<ul style="list-style-type: none"> Sensor vertical back mount ± 10° tip Stainless steel
 SMBQ20H	<ul style="list-style-type: none"> Sensor horizontal flange mount ± 10° swivel Stainless steel
 SMBQ20U	<ul style="list-style-type: none"> Sensor vertical base mount with protection ± 22.5° swivel Stainless steel



Quick-Disconnect (QD) Cables

4-pin Euro-Style	Models	Length
Threaded Euro-style straight	MQDC-406	2 m
	MQDC-415	5 m
	MQDC-430	9 m
Threaded Euro-style right angle	MQDC-406RA	2 m
	MQDC-415RA	5 m
	MQDC-430RA	9 m

4-pin Pico-Style	Models	Length
Snap-on Pico-style straight	PKG4-2	2 m
	PKW4Z-2	2 m
Snap-on Pico-style right angle	PKG4M-2	2 m
	PKG4M-9	9 m
Threaded Pico-style straight	PKW4M-2	2 m
	PKW4M-9	9 m
Threaded Pico-style right angle	PKW4M-2	2 m
	PKW4M-9	9 m

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IP67 rated,
ABS Housing

LED status indicators

18 mm threads
or side mount for
easy installation

LED and
Coaxial Lens

Multiple connection
options available



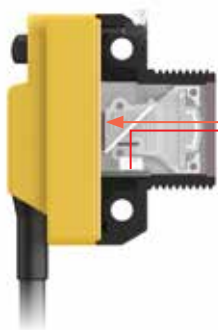
Response speed of **400 μs ON/OFF**



Coaxial optics and small spot size for applications where space is limited



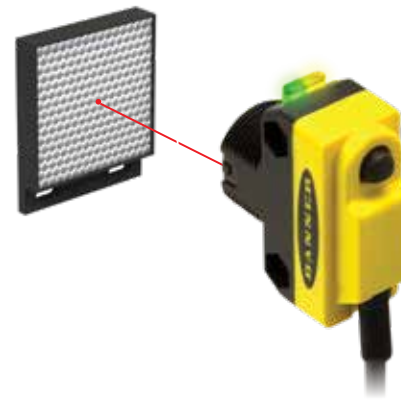
Banner's new **ClearTracking** algorithm provides reliable operation by compensating for dust build-up and ambient temperature changes



Coaxial Optics



- Detects clear and mirror-like surfaces
- Operates at very short distances from the reflector
- Enables very precise leading edge detection



Simple Pushbutton Teach

1. Align the sensor with the reflector
2. Push and hold the button for 2 seconds
3. Begin inspection

Applications



Accurate Tracking of Clear PET Bottles

Application Challenge

Identifying accumulations and gaps on the line is essential to ensuring a steady flow of bottles. Many commonly used sensing technologies cannot consistently detect clear bottles at high speeds.

Solution

The QS18E features a polarized coaxial optical design to ensure reliable detection of clear targets and has a fast 400 microsecond response time. The **ClearTracking** algorithm automatically compensates for the effects of dust and ambient temperature changes.

Three User-Selectable Thresholds

Optimize the sensor's performance to detect small changes in the amount of light received

8%



Glass



Wrapping Film

16%



PET Bottles



IV Bags



Glass Vials

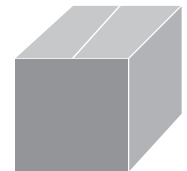


Glass Bottles

32%



Colored Glass Bottles



Boxes



QS18
Clear Object
Detection
Sensor

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Family*	Output	Power	Sensing Mode	Connector
QS18E	P	6	XLPC	Q5
	N = NPN P = PNP	6 = DC Power	XLPC = Polar Retro with coaxial optics	Blank = 2 m Integral Cable Q = M8 4-pin Pico Pigtail QD Q5 = M12 4-pin Euro Pigtail QD Q7 = M8 4-pin Pico QD Q8 = M12 4-pin Euro QD

* All models require a reflector

NOTE: Potentiometer models are also available.
Contact our factory for additional information.

QD models require mating cordset

Power	10 to 30 V dc	Construction	Housing: ABS Lens: PMMA
Range	depends on the reflector	Environmental Rating	IEC IP67
Output Response	400 µs ON/OFF	Repeatability	100 µs
Operating Conditions	-4 °F to +158 °F (-20 °C to +70 °C)	Certifications	

Accessories

Brackets



SMB18A

SMBQ4XFA
Includes 3/8" bolt for mounting

SMBQ4XFAM10
Includes 10 mm bolt for mounting

SMBQ4XFAM12
Clamps directly onto industry standard bracket systems of 1/2" or 12 mm rods

Reflectors

Size (mm)	Range (m)	Model
92 x 92	3.0	BRT-92X92C
51 x 51	2.2	BRT-51X51BM
60 x 40	2.2	BRT-60X40C
50 x 50	2.2	BRT-2X2LVC
60 x 40	1.9	BRT-60X40C-PS
40 x 19	1.3	BRT-40X19A
75 x 75	0.5	BRT-THG-3X3

Cordsets

Type	Length	Model	Type	Length	Model
4-Pin Threaded M12/Euro-Style	2 m (6 ft)	MQDC-406	4-Pin Threaded M8/Pico-Style	2 m (6 ft)	PKG4M-2
	5 m (15 ft)	MQDC-415		5 m (15 ft)	PKG4M-5
	9 m (30 ft)	MQDC-430		9 m (30 ft)	PKG4M-9
	15 m (50 ft)	MQDC-450			

For right-angle models add RA to the model number. Example: **MQDC-406RA**

For right-angle models change **G** to **W** in the model number. Example: **PKW4M-2**



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